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Love, Death and the Hexadecimal

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Love, Death and the Hexadecimal: Computers and Natural Language Processing in Social Work

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Abstract

This paper analyzes the role of information in social casework practice. Three models of computer-based information processing are discussed: Cybernetic, Management Information Systems and Natural Language Processing. The latter is most consistent with social casework information needs because of its potential to focus on the problems of the meaning of social action.

Keywords

Social work, Social work information, Social casework, Natural language processing, Management Information Systems, Text editing, Computers

Introduction

This paper is concerned with the uses of information by social work professionals engaged in the delivery of social casework services. In an earlier paper , a colleague and I set forth the argument that social usage by social workers in the United States has been primarily within the paradigm of a quantitative, management information model, and set forth an approach which we termed natural language processing, which is the use of text-editing and word processing equipment to improve and enhance the processing of information in practice settings (Lohmann and Wolvovsky, 1979). In that earlier work, we suggested the need for a close examination of the actual information practices of social workers. This paper attempts to provide part of that needed analysis. The particular focus upon social casework which is one of the more universal forms of social work practice, found throughout the world in developing and developed countries alike. The extensions of natural language processing perspectives into languages other than English should be straightforward for written languages in which word processing or text editing character sets are available

The title of this paper highlights aspects of the current situation in the United States. Social workers are generally suspicious of electronic computers and related information processing equipment (a category symbolized here by the hexadecimal). Many are convinced such machines are simply irrelevant and inapplicable to use with the profound social and emotional realities – symbolized in the title by love and death – which are the core of their professional concerns. A review of empirical studies of information processing in social casework suggests that neither current

cybernetic nor management information systems (MIS) deal with the core of social work information problems in any important respect.

Although there is a growing literature on applications of computers in social work, almost all of these publications deal with management level problems of control and decision (Lohmann & Wolvovsky, 1979). Cybernet approaches first became popular a decade ago and public welfare quality control strategies in the United States have benefited from such perspectives. In general, however, the fundamental cybernetic model of control-through-feedback has not been successfully fitted to the social casework practice context. Fare more influential, however, has been the interest in management information systems. While it is not my intention to disparage either of these approaches, it is important to note that both perspectives focus consistently on the problem of control, and therefore do not bear directly on the most critical information problems of social work practice. This point will become clearer as we examine research on social work information practices.

Research on Information Use by Social Workers

In a survey of information systems in hospital social service units, Coulton found that sixty percent of the units surveyed had no "ongoing mechanism for collecting, storing and analyzing patient related information" (Coulton, 1979). Does this mean that three out of five hospital social workers do not use information? Hardly. What it probably means is that most use some type of "personal documentation" system of note, desk files, and such to supplement their individual memories (Glantz, 1971; Borman & Mittman, 1972; Burton & Yerke, 1971).

Support for this position comes from Wilson, Streatfield and Mullins (1977, 1979) who found a heavy reliance on such personal information cashes among social workers in Great Britain. This point more than any other is critical to understanding the present gap between management-control based information strategies and the day to day realities of social casework practice.

What about the kinds of information collected, stored and used by social workers? In studies of Local Authority Social Services in Great Britain, Wilson and Streatfield (1977) found heavy reliance on oral communication in face to face encounters and over the telephone. In fact, two thirds of all messages, they observed were in oral form. To the extent that this is a general phenomenon among social workers – as I suspect it is – there are two very clear implications for natural language processing: First, widespread adoption of computers and world processors to deal with the information problems of social workers (as opposed to social agency managers) will occur more readily when hardware and software are adapted to an essentially oral communication milieu. Secondly, the greatest benefits for social workers are likely to come when information can be entered and retrieved orally from case records.

Wilson and Streatfield also found that social workers typically have highly fragmented work days with two thirds of all communication events lasting five minutes or less. Further, many workers at supervisory and managerial levels

participate extensively in meetings which serve primarily as information dissemination events. It is easy to conclude from this that social workers could make more effective use of current information processing equipment if they changed their work habits. However, such an orientation is both unjustified and inappropriate. Rather than sustaining such a view we need to examine further some of the characteristics of social work information which are related to the above practices. In particular we will examine information use in social casework.

Information and Social Casework

Pincus and Minahan (1972) define social work practice as a super system of four component systems: change agent; client; target system; and action system. Social casework is the branch of general social work characterized by the provision of individualized, case-by-case services. In social casework the change agent and client typically interact in a closed environment (the office or interview room). The by-product of these interactions are information: the target system, defining the problem and possible solutions; and the action system, outlining the steps necessary to solve the problem.

In all social casework systems, there is a common unit of information collection, called the *case* which encompasses an individual set of client, target and action systems. The usual term for any set of information about a case is the *case record.* Case records typically consists of *texts* or integrated sets of meaningful statements. In social casework, these case statements and texts are meaningful to the extent they relate life events of the client to the action system, which includes an evolving definition of the problem.

Such statements are the minimal units of meaning and therefore the minimal units of necessary information processing in social casework. *Record statements* may be of several types: *Simple statements* containing a single, clear and unambiguous message (as in the unambiguous statement "I have no money or food."); *Compound statements* contain two or more clear and straightforward messages (e.g., I have a job but it doesn't pay enough for me to live on."); *Complex statements* containing at least one statement with two or more possible meanings; and *Obscure statements,* the archetypal examples are the ramblings of schizophrenics and people with dementia. Obscure texts may be either *coded* in a syntax or vocabulary unfamiliar to work worker, or meaningless *noise*. Much of the challenge of social casework practice involves assessing the information in such statements.

One of the principal information objectives of social casework is creation of a *clear text* or *narrative* whose messages are decoded, unambiguous and meaningful. The familiar designations of "diagnosis, assessment and treatment" define the input, process and output dimension of social casework information processing.

We need to be especially clear on the meaning of the concept of information in the social casework context. Wilson and Streatfield (1977) found that:

> Social workers have a 'unitary' concept of information; that is, anything that bears upon a problem, whatever its origins, is regarded as information without sub-classification into different types deserving separate provision and treatment.

In a general sense, therefore, social workers are typical pragmatists, considering factual and value statements and quantitative and qualitative data equally as each bears upon the definition and resolution of a problem (the case) in question.

It is important to note that from this perspective, the normal coding process for information in social casework involves meaningful statements encoded in natural languages. From this perspective, quantification like that found in typical MIS is a specialized procedure which is appropriate only under two conditions: 1) When a clear isomorphism binding the structure and process of reality as experience by the interactional unit of social caseworker and client to a symbolic expression, formula or equation; and 2) When mathematical or symbolic manipulation of such quantitative statements contribute important new information to understanding of the problem or case.

The information structure of the case record defines a symbolic problem-solving domain within which the social caseworker can manipulate information on client, target and action systems without the necessity (and dangers) of trial and error experimentation. This process approximates other human problem-solving and may be quite amenable to computer applications (Winograd, 1972; Simon and Newell, 1969; Simon and Siklossy, 1972). Such texts have the characteristics of open systems (Steels, 1979). Regardless of whether social workers are relying only on their own memories, keeping notes with pad and pencil or using a computerized text-editing system, certain activities characterize information processing in social casework.

The first and most common activity might be termed *case-making,* or collection and storage of information in a case record. Most case-making activity occurs in the context of interview situations. The second type of information processing activity might be termed *pattern analysis* and is the information component of casework diagnosis or problem definition. The focus is upon search strategies - of the case record initially and secondarily of new or additional information gathered in further interviews. The third type of information processing activity in social casework might be termed *confirmatory search* and corresponds roughly to the scientific research activity of hypothesis testing. In this mode, information in the case record is used first to generate possible explanations for the client's problem and then to test the consistency or support for these claims in the record. A fourth activity for social caseworkers in many settings might be termed *criterion assessment,* or the matching of lists of client characteristics against lists of policy or procedural criteria to determine such matters as fee expectations, eligibility for services, appropriateness of release, discharge or relocation, or placement determinations. Finally, an important information processing activity for social caseworkers in

organized settings might be term *aggregation or* extracting discrete items of information from case records for summary, review, presentation not related directly to the individual case.

Despite great advances of information processing in other fields, the raw materials of information technology in social casework the world over are still typically paper and pencil, notepad, file folder, with perhaps an assist from typewriter or dictation equipment. While aggregation is the task most demanded of social caseworkers at present, as often as not this involves laborious, hand-tabulated mechanical sorts of notes and files and other primitive and error prone procedures. The true challenges of natural language processing in social casework is to discover or develop machine-assisted methods of handling these and related types of information.

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